

Year:	2004	2005	2006	2007	2008	2009	P value
Mean age, years	63	64	64	64	65	64	0.0052
Prior myocardial infarction, %	14.0	13.8	12.3	10.3	9.4	9.7	<0.0001
Killip 4 on admission, %	9.8	7.7	6.4	5.7	5.2	5.3	<0.0001
Clopidogrel, %	57.1	66.6	72.1	85.1	94.0	96.9	<0.0001
Beta-blocker, %	73.5	71.5	67.4	71.9	73.2	76.2	<0.0001
Statin, %	72.0	74.0	72.0	76.3	78.5	80.9	<0.0001
ACE inhibitor, %	65.9	67.6	65.7	69.6	70.3	71.1	<0.0001
Reperfusion therapy, %	64.5	63.2	62.8	67.9	73.2	81.1	<0.0001
Thrombolysis, %	11.2	9.1	6.3	3.4	1.9	1.2	<0.0001
Primary angioplasty (pPCI), %	53.2	54.1	56.5	64.4	71.3	79.8	<0.0001
Bypass surgery (CABG), %	7.6	7.7	6.0	6.3	6.4	5.6	<0.0001
Median time to discharge, days	6	6	5	5	4	5	<0.0001
In-hospital major bleeding, %	0.9	0.7	0.7	1.2	2.2	1.9	<0.0001
In-hospital re-infarction, %	3.1	4.6	2.9	3.4	2.6	1.7	<0.0001
In-hospital mortality, %	10.0	8.9	7.5	6.4	6.2	6.3	<0.0001
30-day mortality, %	12.6	11.8	10.7	9.8	9.6	9.6	<0.0001
12-month mortality, %	17.9	17.6	15.9	15.4	15.4	14.7	<0.0001

Conclusion: Increase in adherence to the guidelines leads to decrease in short and mid-term mortality in STEMI, but the increase in major bleeding complications was noted.

TCT-349

Monocyte Platelet Aggregate act as Platelet Function Assay and Prognostic Marker for Acute Myocardial Infarction

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Background: During acute myocardial infarction (AMI), degranulated platelets adhere to the monocytes and form monocyte platelet aggregate (MPA). The level of MPA can therefore reflect the pathological change and indicate the degree of inflammation and thrombosis in AMI. Recently, MPA assay has been developed for in vivo platelet function assessment. MPA may act as a biomarker for ACS.

Methods: In this single-center prospective observational study, we recruited 29 consecutive AMI patients and 19 healthy controls. Blood samples in first 24 hrs of AMI and Day 5 after dual antiplatelet treatment were taken from patients. MPA level was measured by flow cytometry. MPA in circulating blood were displayed in a dual-fluorescence dot plot of CD14-FITC and CD41-PE. MPA level of the healthy subjects and AMI patients were compared. In wave one analysis, patients were grouped into high MPA group and low MPA group by upper limit of the normal subjects, in which baseline characteristics and clinical endpoints between two groups were compared. In wave two analysis, patients with rising trend of MPA after dual antiplatelet treatment and patients with decreasing trend of MPA were compared. The endpoint is composite cardiovascular endpoints of death, recurrent ACS, cardiogenic shock, heart failure and ventricular tachycardia/ventricular fibrillation (VT/VF) in post AMI day 30.

Results: MPA level in AMI patients (mean= 33) are significantly higher than the normal healthy subjects (mean=25). (p<0.05). In wave one analysis, high MPA group (n=9) and low MPA (n=20) group reaching the endpoint were 55% (n=5) and 30% (n=6) respectively. (p=0.2). In wave two analysis, rising MPA group (n= 12) showed 58.3 % (n=7) patients reaching endpoint. Decreasing trend MPA group (n=9) showed 11.1% (n=1) patient reaching endpoint. Rising MPA group showed a trend of more post MI complications compared to decreasing MPA group but statistically, it is not significant. (p= 0.06).

Conclusion: MPA significantly elevated in AMI patients. There is a trend that high MPA and rising MPA in AMI patients will have more post MI complications.

TCT-350

Very Late Hazard with Primary Stenting versus Primary PTCA for STEMI: A 16 Year Single Center Experience

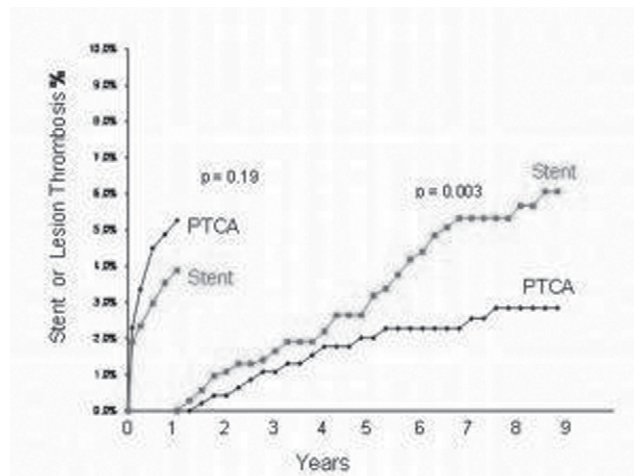
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Background: Stenting compared with PTCA for STEMI reduces TVR and target vessel re-occlusion at 6-12 months. Comparison of outcomes beyond 12 months has not been studied. We hypothesized that there may be a very late hazard with stenting vs PTCA due to very late stent thrombosis (ST).

Methods: From 1995-2010 consecutive pts with STEMI were treated with primary PTCA (n=601) or primary stenting with BMS or DES (n=1594). Clinical and angiographic follow-up were obtained at 1-16 yrs. Comparable definitions were used for ST (ARC definite or probable) and lesion thrombosis (LT).

Results: Pts treated with PTCA were older, more often female, had more hypertension, more 3V CAD, smaller vessels, more TIMI 0-1 flow at initial angiography, and longer reperfusion times. At 1 yr there were mild trends for lower mortality, MI and ST/LT with stenting vs PTCA. In landmark analyses after 1 yr, pts treated with stenting vs PTCA had more very late ST/LT (Figure) and more TV MI but no differences in death or total MI. Most of the differences in ST/LT and TV MI between stents and PTCA were due to differences between DES and PTCA with smaller differences between BMS and PTCA. After adjusting for baseline risk, stents vs PTCA had more very late ST/LT (HR 2.63, 95% CI 1.40-4.95, p=0.003) and more very late TV MI (HR 2.98,

95% CI 1.68-5.31, p<0.001).



Conclusion: There appears to be a very late hazard with primary stenting compared with primary PTCA for STEMI with more very late ST/LT and more TV MI. These data should encourage new strategies for prevention of very late ST with both BMS and DES including the development of bio-absorbable stents and polymers.

TCT-351

Impact of Bleeding on Mortality in Patients Referred for Primary PCI

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Background: There is limited contemporary data on factors that predict bleeding in the setting of primary PCI, and on the impact of bleeding on mortality.

Methods: We identified pts referred for primary PCI from our database. Standard therapy before catheterization included ASA 160mg, clopidogrel 600mg and UFH 60 u/kg (max 4000). Bleeding was defined as TIMI major/minor bleeding. We used logistic regression to determine baseline variables associated with bleeding during the initial hospitalization and all-cause mortality at 180 days.

Results: Between May 2005 and July 2010, 2032 consecutive pts with STEMI were referred for primary PCI. Primary PCI was performed in 93% of pts and transradial access was used in 12%. Bivalirudin was used in 29% of pts and glycoprotein 2b/3a inhibitors to 36%. Bypass surgery was performed in 4%. TIMI major/minor bleeding occurred in 14.8% of pts: TIMI major in 4.5% and TIMI minor in 10.3%. Blood transfusion was needed in 6.3% of pts. Independent predictors of bleeding were Killip class, anterior STEMI, transfemoral access, age, anemia, serum creatinine, door-to-balloon time, height and the use of glycoprotein 2b/3a vs. bivalirudin. Mortality at 180 days was 7.7% for the entire group: 18.5% in pts with bleeding vs. 5.6% in pts without bleeding, p<0.0001. The mortality rate was 24.4% in pts with major bleeding and 15.8% in pts with minor bleeding. The results of the multivariable analysis to determine predictors of mortality at 180 days are shown in the Table below.

Variable	Odds Ratio	LCI	UCI	p-value
TIMI Minor Bleed	3.71	2.09	6.59	<0.0001
TIMI Major Bleed	4.47	2.21	9.03	<0.0001
Diabetes Mellitus	2.97	1.74	5.01	<0.0001
Systolic Blood Pressure	0.99	0.98	0.99	0.02
Heart Rate	1.01	1.004	1.023	0.0007
Killip Class	2.02	1.58	2.58	<0.0001
Age	1.06	1.04	1.08	<0.0001

Conclusion: In the real world setting, TIMI major and TIMI minor bleeding are important predictors of mortality in pts referred for primary PCI. Altering factors that predict bleeding could lead better clinical outcomes.

TCT-352

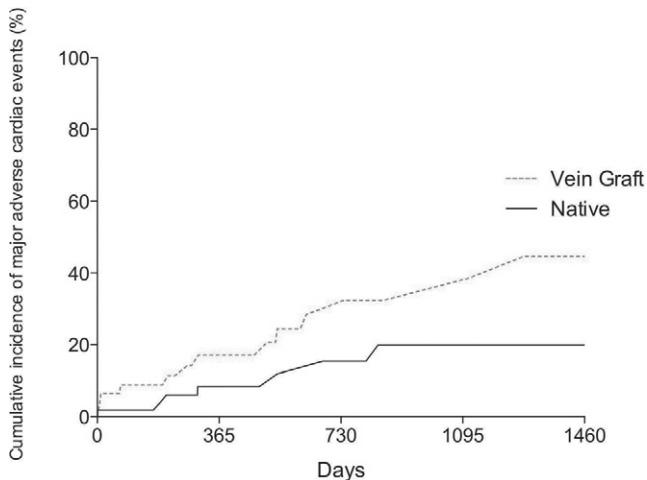
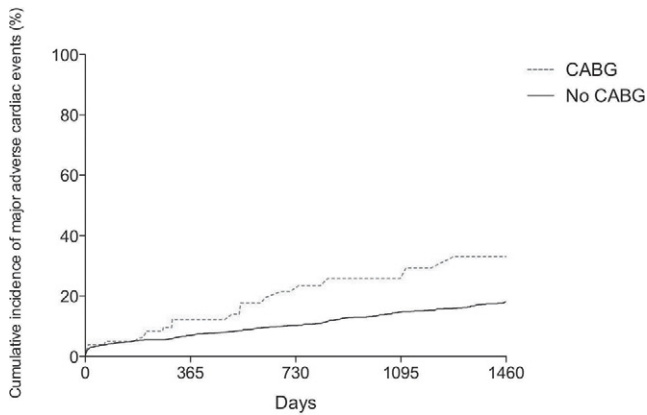
Prior Coronary Artery Bypass Graft (CABG) Patients Treated with Primary Percutaneous Coronary Intervention (PPCI) Have Higher Long-Term Major Adverse Cardiovascular Event (MACE) Rates

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Background: Limited information exists regarding procedural success and clinical outcomes of patients with prior CABG undergoing PPCI for STEMI. We sought to compare outcomes in this group.

Methods: Data was analysed from a prospective database on 2322 STEMI patients undergoing PPCI between 2004-2010 at a London centre. 104 of 2,322 (4.5%) patients had prior CABG. Information was entered at the time of procedure and outcome assessed by all-cause mortality information.

Results: CABG patients were older with higher incidence of multivessel disease. In patients with prior CABG, the IRA was split evenly between a graft (n = 50) versus a native vessel (n = 54). PCI was less successful in the prior CABG group (TIMI flow 3 end of procedure) 84.5% vs 95.6% (p < 0.0001). Prior CABG patients had increased MACE (32.8% vs 16.5%, p=0.01) over the 4-year follow-up (Fig 1). This persisted after multi-variable adjustment (HR: 2.2, 95%CI: 1.26 to 3.78, p = 0.02). Figure 2 shows worse outcomes in those undergoing PPCI to a bypass graft (44.6%) versus native vessel (19.8%, p = 0.04).



Conclusion: Prior CABG patients with STEMI treated with PPCI have higher long-term MACE. This is higher still if the IRA is a bypass graft.

TCT-353

Time-to-Treatment and Infarct Size in STEMI Patients Undergoing Primary Angioplasty

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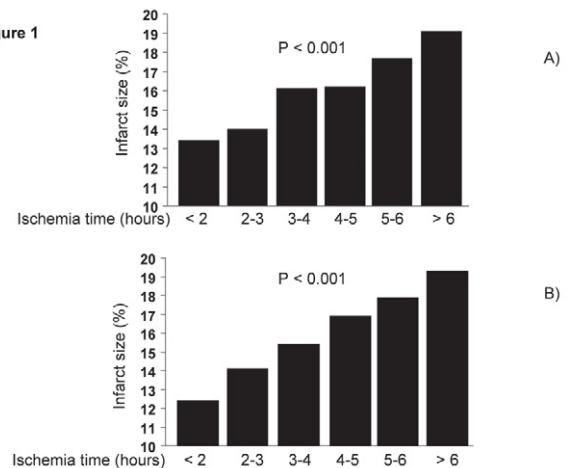
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Background: Several reports have shown that in patient with ST-segment elevation acute myocardial infarction (STEMI) longer ischemia time is associated with impaired reperfusion and higher mortality. However, there is still some doubts with regards time to reperfusion role in patients treated with primary percutaneous coronary intervention (PCI). Therefore, the aim of the current study was to evaluate the impact of time-to-treatment on infarct size in a large cohort of STEMI patients undergoing primary PCI.

Methods: Our population is represented by 830 STEMI patients undergoing primary PCI. Infarct size was evaluated at 30 days by technetium-99m-sestamibi myocardial scintigraphy.

Results: Time-to-treatment was significantly associated with age and dyslipidemia. Time-to-treatment linearly affected the rate of postprocedural TIMI 3 flow (p < 0.0001) and scintigraphic infarct size (p < 0.001; Figure 1A). The impact of time-to-treatment on infarct size persisted in the analysis restricted to patients with postprocedural TIMI 3 flow (Figure 1B), and after correction for confounding factors such as age, dyslipidemia, postprocedural TIMI 3 flow (OR [95% CI] = 1.26 [1.14-1.39], p < 0.001).

Figure 1



Conclusion: This study shows in a large population of STEMI patients undergoing primary PCI that time-to-treatment is linearly associated with infarct size.

TCT-354

Impact Of Pre-Hospital Activation Strategy On Revascularization Time, Left Ventricular Ejection Fraction and Mortality In Patients With ST-Elevation Myocardial Infarction

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Background: The strategy of pre-hospital activation of cath lab services by the emergency medical system (EMS) has been increasingly adopted by many health care systems to reduce mechanical reperfusion times in patients with ST elevation myocardial infarction (STEMI). The clinical impact of this strategy however remains unclearly established.

Methods: We retrospectively identified a total of 188 STEMI patients presenting via EMS to our primary percutaneous coronary intervention capacitated facility from 2008 to 2011, and assessed the impact of the pre-hospital activation strategy (EMS; n=112) on door-to-balloon time (DTBT), left ventricular ejection fraction (LVEF), and in-hospital and 30-day mortality, when compared to conventional emergency department activation (ED; n=76). Inter-hospital transfers and walk-ins were excluded.

Results: The mean age was 65 ± 15 years, and no different between both groups. EMS patients had on average significantly lower DTBT (EMS 45 ± 11 min vs. ED 57 ± 15 min; p < 0.001), and higher post-MI LVEF (EMS 48 ± 9.5% vs ED 39 ± 14.6%; p = 0.004). No differences in in-hospital (EMS 5.4% vs. ED 6.6%; p = 0.75), and cumulative 30-day (EMS 6.3% vs. ED 7.9%; p = 0.68) mortality were however observed. Differences in DTBT and LVEF remained unchanged after propensity-matched analysis. DTBT of < 60 minutes were much more common in the EMS group (95.5% vs 64.5%; p < 0.001).

Conclusion: The pre-hospital activation strategy is largely effective and should be incorporated in the treatment scheme of STEMI patients to lower reperfusion time, increase myocardial salvage, and reduce the potential for untoward clinical outcomes.

TCT-355

Does Thrombus Extraction from IRA during Rescue PCI after Pre-Hospital Thrombolysis Improve Early and Mid-Term Follow-Up in STEMI Patients?

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Background: We assessed safety and efficacy of thrombus extraction from IRA during rescue PCI after pre-hospital TLT.

Methods: Prospective randomized study comprised 121 STEMI pts with pre-hospital TLT within the first 6 hours after the onset of AMI. Pts from Gr. 1 (n=59) had PCI with thrombus extraction from IRA, pts from Gr. 2 (n=62)—only PCI. Baseline clinical, history and angiographic data were similar in both groups. Mean interval from the onset of AMI to the start of procedure was 5.8 ± 1.9 hrs in Gr.1 and 5.2 ± 1.3 hrs in Gr.2 (p > 0.001). Coronary angiography showed effective TLT in 28 (47.6%) and in 34 (54.9%) pts, respectively (p > 0.05). Thrombotic material was evacuated in 42 pts (69.5%) from Gr. 1. Hospital mortality was 0%. One case of subacute stent thrombosis was noted in each group. No-reflow was noted in 1 pt (5.9%) in Gr. 1 and in 3 pts (6.5%) in Gr. 2. Clinical indices and complications rate were comparable in both groups. Immediate results of PCI in 42 pts from Gr. 1 after successful thrombus